

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year) 03.01.2005

Applicant's or agent's file reference
FUELM-19.PCT

IMPORTANT NOTIFICATION

International application No.
PCT/CA 03/01474

International filing date (day/month/year)
06.10.2003

Priority date (day/month/year)
04.10.2002

Applicant
FUELMAKER CORPORATION et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/CA 03/01474**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.
☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
☒ not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-12
	No: Claims	1
Inventive step (IS)	Yes: Claims	2-9
	No: Claims	10-12
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations

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International application No. PCT/CA 03/01474

1. Reference is made to the following documents:
 - D1: WO 01/78872 A (ATLAS COPCO AIRPOWER NV ;VERTRIEST DANNY ETIENNE ANDREE (BE)) 25 October 2001 (2001-10-25)
 - D2: EP-A-0 799 635 (ATLAS COPCO AIRPOWER NV) 8 October 1997 (1997-10-08)
 - D3: US-A-6 117 211 (CHAN ANTHONY WAI PANG ET AL) 12 September 2000 (2000-09-12)
 - D4: US-A-5 263 826 (BAUMANN HEINZ ET AL) 23 November 1993 (1993-11-23)
 - D5: US-A-4 966 206 (BAUMANN HEINZ ET AL) 30 October 1990 (1990-10-30)
 - D6: US-A-5 029 622 (MUTTER HEINZ) 9 July 1991 (1991-07-09)
2. This Authority considers that there are two inventions covered by the claims indicated as follows:
 - I: Claims 1-9 directed to a gas compressor system, suitable for operating in both a dryer and regeneration cycle.
 - II: Claims 10-12 directed to a variable speed driven gas compressor.
- 2.1 The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The prior art documents such as document **D4** (cf. Col.2/L13-35 and fig. 1) or **D5** (cf. fig. 1) disclose gas compressors having the motor enclosed within a casing.

Since the type of enclosure is merely dictated by safety standards (Ex-proof classes for hazardous areas), the only new feature vs. above prior art is the provision of having a variable speed drive.

If the problem to be solved starting from **D4** or **D5** is to allow more flexibility to the compressor unit at turn-down conditions, the feature of providing a variable speed drive is considered to be an obvious one for the man skilled in the art. As a result, the subject-matter of **claim 10** does not fulfill the requirements of Art. 33(3) PCT.
- 2.2 It follows that since the above technical features does not make a contribution over the prior art it can not be considered as a special technical feature within the meaning of Rule 13.2 PCT.

This appears to show lack of corresponding technical effect for **claim 1**, concerned with

a different problem, i.e. the operation of a compressor.

Consequently, neither the objective problem underlying the subjects of the claimed inventions, nor their solutions defined by the special technical features allow for a relationship to be established between the said inventions, which involves a single general inventive concept.

- 2.3 In conclusion, the groups of claims are not linked by common or corresponding special technical features and define two different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

3. First invention

- 3.1 None of the cited documents anticipate the feature allowing a closed loop circulation, wherein at least a portion of the recirculating gas is passing through the desiccant bed for regeneration. Thus, the subject-matter of independent **claim 1** represents a is novel (Art. 33(2) PCT). These features, however, do not seem to introduce subject-matter which could be considered to be inventive according Art. 33(3) PCT as they are merely directed to a possible operation mode (discontinuous) of a known compressor system such as that known from **D1** or **D2**, both operating in continuous mode.

- 3.2 The feature of positioning the desiccant bed between the first and second stage of a compressor as in **claim 2**, is novel and not fairly suggested by the available prior art and allows to design the desiccant bed for lower pressure levels (Art. 33(2) - (4) PCT).

- 3.3 Dependent **claims 3-9** concern particular embodiments of the subject-matter of above independent claims 1 considered together with **claim 2**, and therefore, they fulfil the requirements of Articles 33(2) - (4) PCT as well.

4. Second invention

- 4.1 As already stated in 2.1, the subject-matter of **claim 10** does not suffice the requirements of Art. 33(3) PCT. Dependent **claims 11-12** do not seem to contain additional patentable subject-matter.

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- 4.2 Additionally, there seems to be a contradiction between the way of controlling the driver speed in **claim 10** (frequency) and **claim 12** (multiple harmonics).

For
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permitting the compressor to draw gas from the interior volume.

Abstract

A gas compressor unit according to the invention includes a single gas desiccant bed and condenser (which is inactive during the compression stage) inserted into the gas flow path of the compression cycle. In the case of a multi-stage compressor, the single gas desiccant bed is inserted between preferably the first and second stages. Moisture absorbed into this bed is periodically removed by exposing the bed to a regeneration cycle. The regeneration cycle employed is based on the closed re-circulation of gas present in the compressor and the desiccant bed itself, as well as other gas present in the re-circulation loop when the unit suspends delivery of compressed gas. Moisture removed from the desiccant bed is condensed and preferably evaporated into the environment through a semipermeable membrane. The motor and motor controller are located with the compressor in a common casing to minimize electromagnetic emissions.

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